



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,693	08/17/2001	Koji Matsuo	KOJIM-417	1573
23599	7590	03/16/2004	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			LOPEZ, CARLOS N	
			ART UNIT	PAPER NUMBER
			1731	

DATE MAILED: 03/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary****Application No.**

09/930,693

**Applicant(s)**

MATSUO ET AL.

**Examiner**

Carlos Lopez

**Art Unit**

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 4-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### ***Election/Restrictions***

In regards to applicant arguments that the restriction should be withdrawn is unpersuasive. It is first noted that a rejoinder of the withdrawn claims are done when the generic claim is found allowable, usually when a species election is required. There is no generic claim nor there was any election requirement for a species in the instant application. Additionally, claim 1 from which the withdrawn claims are dependent on has not been found allowable.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 7-11, and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkey et al (US 6,319,634) in view of Examiner's Official Notice as evidenced by Ruppert et al (US 5,788,730). Berkey discloses a method of making a photomask blank by the flame hydrolysis method. As shown by Berkey in bridging paragraph of columns 5-6 and figure 8, porous silica matrix is produced by feeding oxygen gas, hydrogen gas, a silica-forming reactant gas, from a burner to a reaction

Art Unit: 1731

zone, flame hydrolyzing the silica-forming reactant gas in the reaction zone to form fine particles of silica and depositing the silica particles on a rotatable substrate (42) in the reaction zone. The claimed angle between the burner 48 and the formed silica matrix 46 is 90 degrees as shown in figure 8. The claimed heating and vitrifying in a fluorine atmosphere is taught in column 8, lines 12-15 and Col. 7 lines 40-50. Berkey is silent disclosing the claimed density and distribution. However, Examiner takes official notice as shown by Ruppert, that the density of the silica matrix is desired to be constant, zero density distribution, and the density of the silica matrix would depend on the desired purpose (Col. 2, lines 37ff). As further shown by Koya (US 4,650,511) a silica matrix intended for transmitting light, which is produced by the flame hydrolysis method, has an average density of .1 to about .5g/cc (Koya Col. 4, line 12). Hence at the time the invention was made it would have been obvious to a person of ordinary skill in the art to have made the silica matrix with zero distribution as shown to be customary in the art and to select the desired density for the desired end product, in the instant case glass material for transmitting light which has a silica matrix having average density of .1 to about .5g/cc as shown by Koya. Alternatively, in view that the teachings of Berkey meet the claimed steps of Applicant's claim 1, it would be expected that a resultant silica matrix have the claimed density and distribution.

As for claim 2, Berkey in col. 8, lines 5 ff, discloses feeding fluorine in the reaction zone along with the silica-forming reactant gas.

Art Unit: 1731

As for claims 7-9, Berkey teaches of using silicone tetrachloride, siloxane  $\text{SiO}_2$ , which would include the claimed tetramethylsiloxane, and silicone tetrafluoride (Col. 6, lines 15ff).

As for claims 10-11, Berkey in Col. 7 lines 40-50, discloses doping the silica matrix in a fluorine atmosphere containing helium.

As for claim 15, the silica matrix in figure 8 of Berkey has a cylindrical form.

Applicant is also referred to references C-D in PTO-892 showing that the claimed angle between the burner and silica matrix is approximately 120 degrees.

Claims 3 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkey et al (US 6,319,634) as applied to claim 1 above in view of Shiraishi et al (US 6,653,024). Berkey is silent treating the photomask blank quartz glass in a hydrogen-containing atmosphere. However, Shiraishi teaches in bridging paragraph of col. 18-19: "Further, the fluorine-doped synthetic silica glass is heat treated in a hydrogen gas-containing atmosphere to obtain fluorine- and hydrogen-doped synthetic silica glass (S5). As the hydrogen gas-containing atmosphere, an inert gas atmosphere containing 0.1 to 100vol % of hydrogen gas is preferable". As noted by Shiraishi (Bridging paragraph of col. 18-19), the doping hydrogen is done at relatively low temperature as not more than 500 degrees Celsius, in this manner hydrogen molecules can be doped in the glass in a hydrogen molecules state,  $\text{H}_2$ , without creation of Si--H bonds with the glass, which easily become unwanted E'centers, and without causing a reduction of the Si--F bonds of the fluorine doped glass. Thus, the doped glass having hydrogen atoms terminates any E'centers produced by exposure to ultraviolet rays and a stronger UV resistance glass can be

Art Unit: 1731

obtained (Bridging paragraph of col. 18-19). Thus, at the time the invention was made it would have been obvious to a person of ordinary skill in the art to have heat treat Berkey's glass in a hydrogen containing atmosphere at a temperature of not more than 500 degrees Celsius, in order to obtain a stronger UV resistance glass.

Claims 1, 7-8, 10-11 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koya et al et al (US 4,650,511). Koya discloses a method of making a dehydrated quartz glass preform by the flame hydrolysis method. As shown by Koya in example 1, porous silica matrix is produced by feeding oxygen gas, hydrogen, and a silica-forming reactant gas, from a burner to a reaction zone, flame hydrolyzing the silica-forming reactant gas in the reaction zone to form fine particles of silica and depositing the silica particles on a rotatable substrate in the reaction zone. The resulting silica matrix has an average density of .1 to about .5g/cc (Col. 4, line 12). Additionally as shown in Example 2, the silica matrix is heated and vitrified in a fluoride compound atmosphere. Koya is silent disclosing the density distribution. However, Examiner takes official notice that providing a silica matrix with constant density is desired in the art (See US 5788730 Col. 2, lines 39ff). Hence, absent any indication by Koya the resultant silica matrix would be expected to have a constant density in order to have constant properties. Koya is also silent disclosing the claimed angle of 90 degrees. However, Examiner takes official notice that providing a burner and the a silica matrix at 90 degrees is well known in the art as supported by US 52035898 and

Art Unit: 1731

Berkey above in order to provide a uniform deposition of the soot particles onto the substrate.

As for claims 7-8, Koya in example 1 uses silicone tetrachloride as the forming gas.

As for claims 10-11, Koya's example 1 treats the silica matrix in an atmosphere comprising a fluoride compound and helium gas.

As for claim 15, the silica matrix is conventionally in cylindrical form.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-3 and 7-15 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References F-K in PTO-892 have been cited to show the state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1731

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CL  
March 3, 2004

  
STEVEN P. GRIFFIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700